



PROJECT IMPLEMENTATION PLAN

PIP Issue Date	26 April 2019
Project Code	19-AG-17-GE-DLN-A-03
Title	Self-learning e-Course on Innovative Cost-effective Technologies for Sustainable Agriculture
Reference	Project Notification 19-AG-17-GE-DLN-A dated 27 November 2018
Timing and Duration	7 October 2019–6 October 2020 (12 months)
Implementing Organization(s)	APO Secretariat and National Productivity Organizations (NPOs)
Number of Participants	Minimum 400 participants
Self-registration	<p>Self-registration opens from 10:00 AM Japan Standard Time on 7 October 2019 on the eAPO web portal: http://eAPO-tokyo.org</p> <p>Note: Participants can register directly from this portal on the APO website. Those who are already registered can access the course by using the assigned username and password. If you have forgotten your username and password, please refer to the help page on the home page of the portal.</p>

1. Objectives

- a) To understand the concepts and features of cost-effective technologies to enhance sustainable agricultural productivity and maximize supply chain value;
- b) Share recent innovations and trends in agricultural technologies and review how they could be adopted for long-term sustainable profitability; and
- c) Promote the benefits and applicability of agricultural digital innovations on a small scale in APO member countries and how each player can add value by leveraging their strengths and those of their partners in value chains.

2. Background

Industry 4.0 technologies have led to a paradigm shift in agricultural efficiency. Applications of the Internet of Things and connected devices on farms and across supply chains allow the collection of exponential amounts of data and enable meaningful analysis for productivity enhancement in agriculture. Precision agriculture encompasses such technological advances. It is broadly defined as scientific agriculture smartly controlled by data collected and computed via sensors. Digitized management is at the core of precision farming for optimal use of agricultural inputs and enhanced production capacity. Its operations require a certain level of IT infrastructure and capital investment, which could be an entry barrier to adopting Industry 4.0 for agricultural transformation. For example, online devices, gadgets, compatible software, and in/outdoor facilities that enable digital connections are necessary for operations. Despite the challenges, many countries are attempting to transform traditional agriculture into digital-based production.

Newer agricultural technologies are able to offset input costs while improving productivity and food security. This self-learning e-course will show how technological advances contribute to the sustainability and cost-effectiveness of agriculture through enhancing productivity and reducing waste. Considering the economic conditions of less developed countries, it will also introduce and review technologies applicable on a small-scale basis. Affordable, accessible, simple technologies that utilize existing infrastructure and resources will be discussed. For example, many reports cite mobile phones as efficient tools for information and knowledge sharing throughout agricultural supply chains. Sharing new production technologies such as improved seed varieties, nutrient management, and pest control methods can directly lead to productivity growth.

This course will introduce appropriate agricultural technologies that can contribute to long-term sustainability. It will also take a broad-based approach to the scope and definition of cost-effective technologies in response to the diverse needs of APO member countries.

3. Scope and Methodology

The tentative course structure is as follows:

Module 1: Introduction to sustainability and cost-effectiveness in agriculture

Background and key drivers of sustainable agriculture; relationship between sustainable agriculture and technological advances; introduction to digital farming such as types of data, definitions, concepts, data versus actionable data, and integration of practices for sustainable, cost-effective technology adoption; challenges and opportunities in agricultural transformation to digitized management; how digital records and utilization improve genetic choices, inputs, and labor; and examples of relevant technology.

Module 2: Hardware technologies for agricultural production and farm management

Introduction to current advances and trends in in-field agricultural technologies; innovative, transformative technologies for agricultural resource management; technologies for precision farming; cost-benefit analysis of recent agritechologies; simple, economical agritechologies for production; public-private opportunities and value propositions for agritechologies; technologies requiring larger investments for larger returns and broader implications for users; and relevant examples and case studies.

Quiz 1 (for self-assessment based on questions from Modules 1 and 2)

Module 3: Crop and farm management software

How software and mobile apps bring value to the farm; data collection and utilization using smart phones and how to leverage outside data; explaining data, big data, and their value throughout supply chains; data use for benchmarking, data sharing, and data protection; utilizing dashboards and collaborative platforms, and machine learning; pushing and pulling data through application program interfaces (connecting data and websites) and the value of real-time alerts and actions; and value propositions for leveraging technologies on the farm and through upstream and downstream supply chains.

Module 4: Digital solutions for agricultural distribution and logistics

Agritechnology for improved traceability and food safety; cloud data storage and database options; value propositions for each player in the supply chain; leveraging blockchains and cryptocurrencies through the marketplace; role of the public sector, cooperatives, and agricultural associations in supply chains; supply chains of the future; maximizing logistics: labor and equipment; reducing greenhouse gas emissions and asset tracking; cold chain and environmental monitoring; and cost-effectiveness of digital technologies.

Module 5: Technologies for climate-resilient agriculture

Measuring and responding to local climate change: planning for change and being proactive toward the environment; how machine learning and artificial intelligence play a role in constant innovation and improvement; and training in and acting on digital predictions and prescriptions.

Quiz 2 (for self-assessment based on questions from Modules 3, 4, and 5)

Module 6: Scientific management of livestock and animal health technologies

Tools to help manage livestock farming from growing, buying, and monitoring feed and nutrition to online livestock auctions; increasing the visibility of pricing and competitive marketplaces; methods to reduce input costs and waste while improving quality and supply; and the cost-effectiveness of such technologies.

Module 7: Building local or national ecosystems to support agritechnology adoption

Case studies of tools and methods to successfully integrate innovation throughout supply chains with the involvement of all parties; digital technology training, support, collaboration, and planning; building up ecosystems to support technologies in agriculture; who should use the technologies when and how; creating localized sales and support networks; and technology roadmaps for the public sector to reach small farmers.

Module 8: Knowledge sharing, pricing, and information management solutions

Trading, market, and price information; local and global trends in shifting consumer and retail demand and how to add value; tools to increase the visibility of raw and finished product pricing while connecting farmers with buyers; input visibility: how much should be paid for seed, fertilizers, chemicals, etc.; semi-centralization of supply chains; credit and insurance for small farmers; and recommendations and conclusions.

Quiz 3 (for self-assessment based on questions from Modules 6, 7, and 8)

Module 9: Final examination

Methodology

Self-learning e-modules, additional study materials for participants, intermittent quizzes for self-assessment, assignments, and a final examination to qualify for the APO e-certificate.

4. Qualifications of Candidates

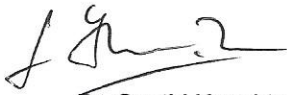
The target participants are policymakers and government officers involved in enhancing agricultural productivity and promoting effective agritechnologies; business leaders, managers, and practitioners engaged in value addition and digital solutions for agricultural supply chains; consultants,

professionals, and trainers specializing in agricultural technologies; and those who want to expand their knowledge of sustainable, cost-effective technologies for agricultural transformation.

5. Eligibility for e-Certificate

A minimum score of 70% on the final examination is required to qualify for the APO e-certificate.

Note: Participants from nonmember countries are welcome to take the course for self-development, although APO e-certificates will not be provided.



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